



PCT09

RAW SEQUENCE LISTING

DATE: 02/25/2002

PATENT APPLICATION: US/09/889,874

TIME: 10:51:11

Input Set : A:\13384-002001.TXT

Output Set: N:\CRF3\02252002\I889874.raw

ENTERED

```

4 <110> APPLICANT: Morgan, James Alun Wynne
5      Jarrett, Paul
6      Ellis, Debbie
7      Ousley, Margaret Anne
9 <120> TITLE OF INVENTION: BIOLOGICAL CONTROL OF NEMATODES
12 <130> FILE REFERENCE: 13384-002001
14 <140> CURRENT APPLICATION NUMBER: 09/889,874
15 <141> CURRENT FILING DATE: 2001-07-23
17 <150> PRIOR APPLICATION NUMBER: PCT/GB00/00219
18 <151> PRIOR FILING DATE: 2000-01-24
20 <150> PRIOR APPLICATION NUMBER: GB 9901499.5
21 <151> PRIOR FILING DATE: 1999-01-22
23 <160> NUMBER OF SEQ ID NOS: 52
25 <170> SOFTWARE: FastSEQ for Windows Version 4.0
27 <210> SEQ ID NO: 1
28 <211> LENGTH: 662
29 <212> TYPE: PRT
30 <213> ORGANISM: Xenorhabdus bovienii
32 <400> SEQUENCE: 1
33 Ile Ser Trp Phe Ala Thr Gly Ile Pro Thr Val Asp Ala Leu Leu Ala
34 1          5          10          15
35 Glu Glu Phe Trp His Gly Asp Lys Gln Ala Phe Pro Pro Phe Thr Cys
36          20          25          30
37 Arg Phe Thr His Phe Asp Pro Asp Lys Glu Gln Asp Val Thr Leu Val
38          35          40          45
39 Pro Ser Thr Glu Glu Ala Tyr Trp Leu His Arg Ala Leu Gln Gly Gln
40          50          55          60
41 Pro Leu His Ser Glu Val Tyr Gly Asp Asp Gly Thr Ala Gln Ala Gly
42 65          70          75          80
43 Ile Pro Tyr Thr Val Met Asp Ser Arg Pro Gln Val Arg Leu Leu Thr
44          85          90          95
45 Gly Leu Pro Gly Asn Ser Pro Thr Val Trp Pro Ser Val Ile Glu Gln
46          100         105         110
47 Arg Thr Trp Gln Tyr Glu Arg Ile Ala Asp Asp Pro Gln Cys His Gln
48          115         120         125
49 Gln Val Val Leu Asn Ser Asp Arg Tyr Gly Phe Pro Arg Glu Thr Val
50          130         135         140
51 Asp Ile Ala Tyr Pro Arg Arg Pro Lys Pro Ala Val Ser Pro Tyr Pro
52 145         150         155         160
53 Asp Thr Leu Pro Ala Thr Leu Phe Asp Ser Ser Tyr Asp Glu Gln Gln
54          165         170         175
55 Gln Gln Leu Arg Leu Thr Arg Gln Arg Gln His Tyr His His Leu Thr
56          180         185         190

```

RAW SEQUENCE LISTING

PATENT APPLICATION: US/09/889,874

DATE: 02/25/2002

TIME: 10:51:11

Input Set : A:\13384-002001.TXT

Output Set: N:\CRF3\02252002\I889874.raw

```

57 Asp Thr Glu His Gln Val Leu Gly Leu Pro Asp Val Met Arg Ser Asp
58      195      200      205
59 Ala Trp Gly Tyr Pro Ala Ala Arg Val Pro Arg Glu Gly Phe Thr Leu
60      210      215      220
61 Glu Asp Leu Leu Ala Glu Asn Ser Leu Ile Ala Pro Gly Thr Pro Leu
62 225      230      235      240
63 Thr Tyr Leu Gly His Gln Arg Val Ala Tyr Thr Gly Thr Thr Gly Thr
64      245      250      255
65 Glu Glu Lys Pro Thr Arg Gln Ala Leu Val Ala Tyr Thr Glu Thr Ala
66      260      265      270
67 Val Phe Asp Glu Leu Ala Leu Gln Ala Phe Asn Gly Thr Leu Ser Pro
68      275      280      285
69 Glu Ala Leu Glu Lys Lys Leu Ile Glu Ser Gly Tyr Leu Ser Val Pro
70      290      295      300
71 Arg Pro Phe Asn Thr Gly Ala Glu Ser Ala Val Trp Val Ala Arg Gln
72 305      310      315      320
73 Gly Tyr Thr Asp Tyr Gly Gly Ser Glu Ala Phe Tyr Arg Pro Leu Ala
74      325      330      335
75 Gln Arg Thr Thr Val Gln Ile Gly Lys Asn Thr Leu His Trp Asp Thr
76      340      345      350
77 His Tyr Cys Ala Val Val Arg Met Gln Asp Ala Ala Gly Leu Tyr Thr
78      355      360      365
79 Asp Ala Ala Tyr Asp Tyr Arg Phe Leu Thr Pro Val Gln Ile Thr Asp
80      370      375      380
81 Ala Asn Asp Asn Gln Gln His Ile Thr Leu Thr Ala Leu Gly Gln Val
82 385      390      395      400
83 Ser Ser Gly Arg Phe Trp Gly Thr Glu Glu Gly Thr Pro Gln Gly Tyr
84      405      410      415
85 Thr Pro Pro Glu Asp Arg Pro Phe Thr Pro Pro Ser Ser Val Ala Glu
86      420      425      430
87 Ala Leu Asp Leu Lys Pro Asp Leu Pro Val Ala Asn Cys Met Val Tyr
88      435      440      445
89 Ala Pro Leu Ser Trp Met Pro Leu Ala His Thr Tyr Gln Glu Tyr Ile
90      450      455      460
91 Ala Gly Phe Thr Trp Gln Ala Leu Leu Asp Ala Gly Val Val Thr Glu
92 465      470      475      480
93 Asp Lys Arg Val Cys Ala Leu Gly Phe Arg Arg Trp Val Gln Arg Gln
94      485      490      495
95 Gly Ile Val Leu Asn Gly Gln Ala Leu Ala Asp Ser Arg Glu Pro Val
96      500      505      510
97 His Val Leu Thr Leu Ala Thr Asp Arg Tyr Asp Thr Asp Pro Asp Gln
98      515      520      525
99 Gln Leu Arg Lys Ser Val Thr Tyr Ser Asp Gly Phe Gly Arg Leu Leu
100      530      535      540
101 Gln Ser Ala Val Tyr His Ala Pro Gly Glu Ala Trp Gln Arg Ala Ala
102 545      550      555      560
103 Asp Gly Ser Leu Ile Thr Asp Ala Lys Gly Ala Pro Leu Val Ala His
104      565      570      575
105 Thr Ala Thr Arg Trp Ala Val Ser Gly Arg Thr Glu Tyr Asp Gly Lys

```

RAW SEQUENCE LISTING

PATENT APPLICATION: US/09/889,874

DATE: 02/25/2002

TIME: 10:51:11

Input Set : A:\13384-002001.TXT

Output Set: N:\CRF3\02252002\I889874.raw

```

106          580          585          590
107 Gly Gln Pro Val Arg Thr Tyr Pro Pro Phe Phe Leu Asn Ala Trp Gln
108          595          600          605
109 Tyr Leu Ser Asp Asp Ser Ala Arg Gln Asp Leu Asn Ala Asp Thr His
110          610          615          620
111 Arg Tyr Asp Pro Leu Gly Arg Glu Tyr Gln Val Arg Thr Ala Lys Gly
112 625          630          635          640
113 Tyr Leu Arg Gln Asn Arg Leu Thr Pro Trp Phe Val Val Asn Glu Asp
114          645          650          655
115 Glu Asn Asp Thr Leu Ser
116          660
118 <210> SEQ ID NO: 2
119 <211> LENGTH: 105
120 <212> TYPE: PRT
121 <213> ORGANISM: Xenorhabdus bovienii
123 <400> SEQUENCE: 2
124 Tyr Leu Pro Gln Arg Gly Gln Cys Asp Met Leu Leu Val Val Ile Gly
125 1          5          10          15
126 Ile Gly Tyr Leu Asn Gly Gly Gln Glu Ala Val Ile Ile Gly Gly Ile
127          20          25          30
128 Arg Val Gln Thr Arg Arg Ile Leu His Thr Asp Asp Arg Thr Val Met
129          35          40          45
130 Gly Ile Pro Met Glu Gly Val Phe Ala Asn Leu His Arg Arg Pro Leu
131          50          55          60
132 Ser Gln Arg Thr Val Lys Arg Leu Arg Pro Ala Val Ile Gly Ile Ser
133 65          70          75          80
134 Leu Thr Gly Asp Pro Asp Arg Arg Phe Arg Thr Gly Ile Glu Trp Ala
135          85          90          95
136 Trp Asn Arg Gln Ile Thr Arg Leu Asp
137          100          105
139 <210> SEQ ID NO: 3
140 <211> LENGTH: 971
141 <212> TYPE: PRT
142 <213> ORGANISM: Xenorhabdus bovienii
144 <400> SEQUENCE: 3
145 Ser His Leu Pro Ala Arg Tyr Gly Gly Arg Leu Thr Thr Leu Ser Arg
146 1          5          10          15
147 Lys Gly Phe Met Thr Val Asn Arg Gly Asp Asn Leu His Gln Lys Thr
148          20          25          30
149 Pro Glu Val Thr Val Leu Asp Asn Arg Gly Leu Thr Val Arg Glu Leu
150          35          40          45
151 Arg Tyr His Arg His Pro Asn Thr Pro Thr Thr Thr Asp Glu Arg Ile
152          50          55          60
153 Thr Arg His Arg Phe Thr Leu Ser Gly Gln Leu Ala His Ser Ile Asp
154 65          70          75          80
155 Pro Arg Leu Phe Asp Leu Gln Gln Thr Asp Asn Thr Val Asn Pro Asn
156          85          90          95
157 Met Ile Tyr Asp Thr Ala Leu Thr Gly Glu Val Val Arg Thr Arg Ser
158          100          105          110

```

RAW SEQUENCE LISTING

PATENT APPLICATION: US/09/889,874

DATE: 02/25/2002

TIME: 10:51:11

Input Set : A:\13384-002001.TXT

Output Set: N:\CRF3\02252002\I889874.raw

```

159 Val Asp Ala Gly Asn Asp Leu Ile Leu Asn Asp Ile Thr Gly Arg Pro
160      115      120      125
161 Val Leu Ala Ile Asn Ala Thr Glu Val Thr Arg Thr Trp Gln Tyr Glu
162      130      135      140
163 Asn Asp Thr Leu Pro Gly Arg Pro Leu Ser Ile Thr Glu Gln Pro Ala
164 145      150      155      160
165 Gly Glu Ala Gly Arg Ile Thr Glu Arg Phe Val Trp Ala Gly Asn Ser
166      165      170      175
167 Gln Ala Glu Lys Asn Ser Asn Leu Ala Gly Gln Cys Val Arg His Tyr
168      180      185      190
169 Asp Thr Ala Gly Leu Asn Gln Thr Asp Ser Ile Ala Leu Asn Gly Ile
170      195      200      205
171 Pro Leu Ser Val Thr Arg Gln Leu Leu Pro Asp Gly Thr Asp Ala Asp
172      210      215      220
173 Trp Gln Gly Asn Asn Glu Pro Ala Trp Asn Asp Arg Leu Ala Pro Glu
174 225      230      235      240
175 Asn Phe Thr Thr Leu Ser Thr Ala Asp Ala Thr Gly Ala Val Leu Thr
176      245      250      255
177 Thr Thr Asp Ala Ala Gly Asn Leu Gln Arg Val Ala Tyr Asp Val Ala
178      260      265      270
179 Gly Leu Leu Thr Gly Ser Trp Leu Arg Leu Ala Gly Gly Thr Glu Gln
180      275      280      285
181 Val Ile Val Lys Ser Leu Thr Tyr Ser Ala Ala Gly Gln Lys Leu Arg
182      290      295      300
183 Glu Glu His Gly Asn Gly Val Val Thr Thr Tyr Thr Tyr Glu Pro Glu
184 305      310      315      320
185 Thr Gln Arg Leu Val Gly Ile Lys Thr Lys Arg Pro Gln Gly His Ala
186      325      330      335
187 Gln Gly Thr Lys Val Leu Gln Asp Leu Arg Tyr Glu Tyr Asp Pro Val
188      340      345      350
189 Gly Asn Val Val Lys Val Thr Asn Asp Ala Glu Val Thr Arg Phe Trp
190      355      360      365
191 Arg Asn Gln Lys Val Val Pro Glu Asn Thr Tyr Val Tyr Asp Ser Leu
192      370      375      380
193 Tyr Gln Leu Val Ser Ala Thr Gly Arg Glu Met Ala Asn Ile Val Gln
194 385      390      395      400
195 Gln Ser Thr Leu Leu Pro Thr Pro Ser Leu Ile Asp Ser Ser Thr Tyr
196      405      410      415
197 Ser Asn Tyr Ser Arg Thr Tyr Asn Tyr Asp Arg Gly Asp Asn Leu Thr
198      420      425      430
199 Gln Ile Arg His Ser Ala Pro Ala Thr Gly Asn Ser Tyr Thr Thr Asp
200      435      440      445
201 Ile Thr Val Ser Asp His Ser Asn Arg Ala Val Leu Asp Thr Leu Thr
202      450      455      460
203 Asp Asp Pro Ala Lys Val Asp Ala Leu Phe Thr Ala Gly Gly His Gln
204 465      470      475      480
205 Ile Pro Leu Gln Pro Gly Gln Asn Leu Val Trp Thr Pro Arg Gly Glu
206      485      490      495
207 Leu Leu Lys Val Ala Pro Val Val Arg Asp Gly Gln Ile Ser Asp Gln

```

RAW SEQUENCE LISTING

PATENT APPLICATION: US/09/889,874

DATE: 02/25/2002

TIME: 10:51:11

Input Set : A:\13384-002001.TXT

Output Set: N:\CRF3\02252002\I889874.raw

208		500		505		510	
209	Glu Ser Tyr Arg Tyr Asp Ala Ala Ser Gln Arg Ile Ile Lys Thr His						
210		515		520		525	
211	Val Gln Gln Thr Ala Asn Ser Ser Gln Ala Gln Ser Thr Leu Tyr Leu						
212		530		535		540	
213	Pro Gly Leu Glu Arg His Thr Thr Ile Asn Gly Thr Thr Val Lys Glu						
214	545		550		555		560
215	Val Leu His Val Ile Thr Ile Gly Glu Ala Gly Arg Ala Gln Val Arg						
216		565		570		575	
217	Val Leu His Trp Glu Asn Gly Lys Pro Gly Ala Ile Ser Asn Asn Gln						
218		580		585		590	
219	Met Arg Tyr Ser Tyr Asp Asn Leu Ile Gly Ser Ser Gly Leu Glu Val						
220		595		600		605	
221	Asp Gly Asp Gly Gln Ile Ile Ser Met Glu Glu Tyr Tyr Pro Tyr Gly						
222		610		615		620	
223	Gly Thr Ala Val Trp Thr Ala Arg Ser Gln Thr Glu Ala Asp Tyr Lys						
224	625		630		635		640
225	Thr Val Arg Tyr Ser Gly Lys Glu Arg Asp Ala Thr Gly Leu Tyr Tyr						
226		645		650		655	
227	Tyr Gly Tyr Arg Tyr Tyr Gln Pro Trp Ala Gly Ser Trp Leu Ser Ala						
228		660		665		670	
229	Asp Pro Ala Gly Thr Ile Asp Gly Leu Asn Leu Tyr Arg Met Val Arg						
230		675		680		685	
231	Asn Asn Pro Ala Thr Leu Asp Lys Asn Gly Leu Ala Pro Gly Asn						
232		690		695		700	
233	Arg Tyr Val Phe Phe Pro Phe Ile His Glu Asp Arg Ile Phe Arg Leu						
234	705		710		715		720
235	Ala Ser Ala Asn Val Tyr Arg Thr Glu His Asn Lys Ser Asp Ile Ile						
236		725		730		735	
237	Ala Val Val Glu Asp Lys Ala Leu Asp Ser Lys Leu Phe Thr Asn Ser						
238		740		745		750	
239	Ile Glu Gln Phe Phe Lys Lys Pro Lys Gly Lys Ala Ile Leu Lys Gly						
240		755		760		765	
241	Ser Pro Asp Ile Lys Glu Arg Leu Leu Asn Asn Ile Val His Asp Leu						
242		770		775		780	
243	Ser Asn Met Gln Val Gly Asp Gln Leu Tyr Val Asn Ala His Gly His						
244	785		790		795		800
245	Ser Ala Lys Pro Phe Phe Tyr Ser Asp Ser Gly Tyr Ser Lys Ile Ile						
246		805		810		815	
247	Met Glu Gln Leu Gln Arg Gly Ala Asn Tyr Val Ala Lys Asp Leu Val						
248		820		825		830	
249	Asn Lys Phe Lys Leu Pro Glu Asn Ala Thr Ile Lys Ile Ser Thr Cys						
250		835		840		845	
251	His Ser Ala Glu Gly Lys Gly Ala His Ile Thr Val Thr Ser Thr Gly						
252		850		855		860	
253	Thr Asn Glu Lys Met Arg Tyr Ser Ser Ile Ile Glu Asn Lys Gly Glu						
254	865		870		875		880
255	Phe Ser Arg Ser Leu Ala Gly Thr Met Glu Asn Glu Leu Ile Lys Leu						
256		885		890		895	

VERIFICATION SUMMARY

PATENT APPLICATION: US/09/889,874

DATE: 02/25/2002

TIME: 10:51:12

Input Set : A:\13384-002001.TXT

Output Set: N:\CRF3\02252002\I889874.raw